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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,219	07/28/2003	Richard Scheps	82948	3293

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OFFICE OF PATENT COUNSEL  
SPAWARSYCEN, CODE 20012  
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EXAMINER

VAN ROY, TOD THOMAS

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/631,219	Applicant(s) SCHEPS, RICHARD	
	Examiner Tod T. Van Roy	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 09/11/2006 have been fully considered but they are not persuasive.

With respect to claims 1-11, and 13, the applicant has stated that diodes operated in pulsed mode does not equal non-steady state operation of the laser diode. The examiner also acknowledges the submission by Mr. Richard Sheps of a declaration that also states this conclusion.

As per the filed declaration: "Only for the first 50-100 nanoseconds of a pulse, is a diode laser considered to be operating in non-steady state mode. After the first 50-100 nanoseconds of a pulse, a diode laser operates in a quasi-continuous wave mode." The examiner does not dispute this point.

The examiner does not believe that the current claim language clearly distinguishes the pumping diode operation from that of the prior art (Sheps '711). '711 teaches pulsed operation of the pumping diodes. Pulsed operation of less than about 100 nanoseconds would be operation in **only** non-steady state mode; however, operation greater than about 100 nanoseconds would comprise operation in non-steady state mode up to about 100 nanoseconds, and quasi-continuous wave mode operation thereafter. As the claim does not state operation **only** in non-steady state mode it is believed that the pulsed mode of Sheps '711 would inherently operate in a non-steady state mode for a given interval prior to quasi-continuous operation, thereby meeting the claimed limitation.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-7, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheps (US 5530711).

With respect to claim 1, '711 discloses a laser (fig.9) comprising a first optically reflective element (fig.9 #39), a second optically reflective element (fig.9 #31e) opposed to and aligned with said first optically reflective element to define a laser cavity having an optical axis, a laser dye gain element (fig.9 #33) having a dye laser dye (col.14 lines 7-9) and which is interposed between said first and second optically reflective elements along said optical axis for transforming an optical pump signal into a resonant optical signal (col.4 lines 48-60), a laser diode system for generating and injecting said optical pump signal into said laser cavity (fig.9 #18,18') along said optical axis, where said optical pump signal is a sequence of optical pulses (col.19 lines 30-39) having a duration of about  $n\tau_f$ , where  $\tau_f$  represents a fluorescence lifetime of said laser dye, and  $3 \leq n \leq 25$  (col.20 lines 15-20) so that said laser diode system operates in a non-steady-state mode (col.19 lines 30-49, diodes are operated in pulsed mode, which is non-steady-state).

A reference noted but not relied upon speaking towards the fact that pulsed operation is considered non-steady-state is Scheps (US 5307358), at col.1 lines 56-59.

With respect to claims 3 and 4, '711 discloses a laser as described in the rejection to claim 1, and also discloses the dye gain element to be of a host material from the group that includes porous glass, plastic, and sol-gels (col.3 lines 32-34) and further discloses the use of polymethylmethacrylate (col.3 line 34).

With respect to claim 5, '711 discloses a laser as described in the rejection to claim 1, and also discloses the first optically reflective element to have a curved reflective surface (fig.9 #39).

With respect to claim 6, '711 discloses a laser as described in the rejection to claim 1, and also discloses the first and second optically reflective elements to define a nearly hemispherical resonator (col.14 lines 25-31, describing a cavity with the reflective elements located such that a hemispherical laser resonator mode is formed, i.e. forming a hemispherical resonator).

With respect to claims 7, 9-11, and 13, '711 discloses the laser as described in the rejections to claims 1, and 3-5 above, while claims 7 and 9-11 are methods of generating the laser output signal and are hence rejected for the same reasons.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheps '711.

With respect to claim 2, '711 discloses the laser device as outlined in the rejection to claim 1 above, but does not explicitly define the pump signal to have a pulse period in the range of 1Khz to 1 Mhz. '711 does however teach that laser diodes can be modulated at a rate exceeding 1 Ghz (col.19 line 49) and that the lifetime of most dyes is several nanoseconds (col.19 lines 65-66). It is further stated that the lifetime of the laser gain element (being pumped) places an upper limit on the modulation rate that can be achieved (col.19 lines 57-59, meaning that lower modulation rates may be used, falling in the 1Khz to 1Mhz limit, and that the restriction is specifically on the upper limit of the pumped material). Therefor, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser device with the 1Khz to 1Mhz pump pulse period in order to properly tune the dye laser to deliver a fixed amount of energy per pulse avoiding damaging optical components (col.20 lines 19-29, and see MPEP 2144.05 (II a&b) speaking on optimization of ranges and effective variables).

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With respect to claim 8, '711 discloses the laser as described in the rejections to claims 1, and 2 above, while claim 8 is a method of generating the laser output signal and is hence rejected for the same reasons.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

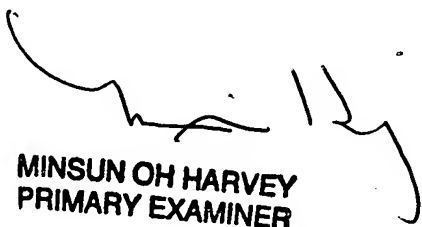
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR



**MINSUN OH HARVEY**  
**PRIMARY EXAMINER**